

# 16A 1/16 DIN Temperature / Process Control

The 16A Series temperature / process controls set a new standard in 1/16 DIN power, flexibility, and value. This family of controls offers family interchangeability with different levels of features.

The 16A2 offers universal input (10 thermocouple types, 4 RTD types, voltage, and current), single or dual set point, alarm (optional), Fuzzy Logic, Self-tune, Peak / Valley indication, Percent Output indication, and Heater Break protection.

The 16A3 adds to this impressive list, Auto / Manual capability, and 16 Segment Ramp and Soak with adjustable time base.

Options for the 16A2 and 16A3 include Process Output Retransmission (Voltage or Current), Remote Analog Set Point (Voltage, Current, Resistance), RS-232 Serial Communication, RS-485 Serial Communication, and 4-Stage Set Point.

Designed and built in the USA, the 16A family of controls offers the highest levels of features, function, and quality available today.



## STANDARD FEATURES

- Fuzzy logic with Self Tune
- Universal input
- Isolated outputs
- Loop break protection
- Peak / Valley indication
- Percent output indication
- Illuminated keypad
- Four password protected security levels
- 16 segment Ramp / Soak function (16A3)
- Auto / Manual station function (16A3)



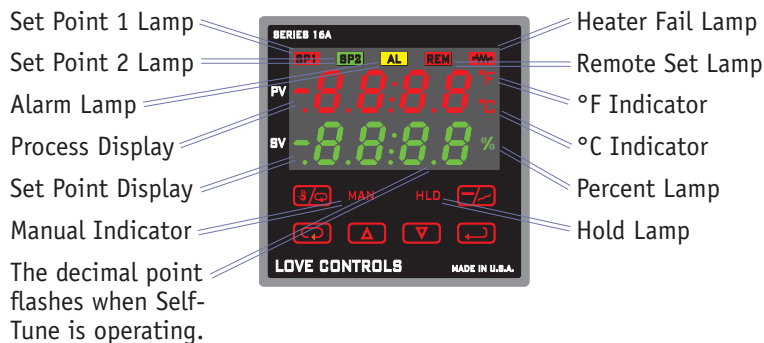
## Inputs

INPUT TYPE	RANGE °F	RANGE °C
Type J or L <sup>1</sup> Thermocouple	-100 to +1607	-73 to +871
Type K <sup>1</sup> Thermocouple	-200 to +2500	-129 to +1371
Type T <sup>1</sup> Thermocouple	-350 to +750	-212 to +398
Type E <sup>1</sup> Thermocouple	-100 to +1800	-73 to +982
Type R Thermocouple	0 to 3200	-17 to +1760
Type S Thermocouple	0 to 3200	-17 to +1760
Type B Thermocouple	+75 to +3308	+24 to +1820
Type C Thermocouple	0 to 4208	-17 to +2320
Type N <sup>1</sup> Thermocouple	-100 to +2372	-73 to +1300
100 Ω Plt. 0.00385 DIN <sup>1</sup> RTD	-328 to 1607	-200 to +875
100 Ω Plt. 0.00392 Nist <sup>1</sup> RTD	-328 to 1607	-200 to +875
120 Ω Nickel 0.00628 US <sup>1</sup> RTD	-112 to +608	-80 to +320
1000 Ω Plt. 0.00385 DIN <sup>1</sup> RTD	-328 to +1607	-200 to +875
Current/Voltage/Δ Voltage <sup>2</sup>	Scalable Units from -1999 to +9999	

<sup>1</sup> These Input Types can be set for 0.1° display. If temperature goes above 999.9° or less than -199.9° the display will return to whole degree resolution.

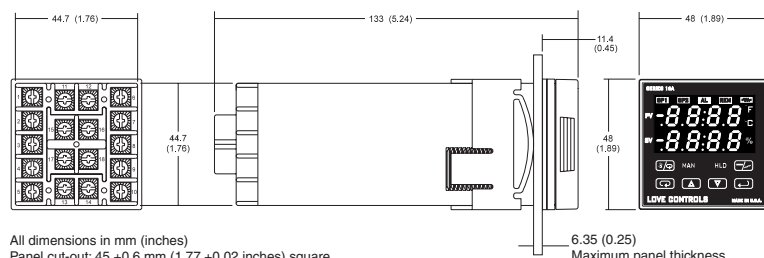
<sup>2</sup> The 0 to 20 mADC, 4 to 20 mADC, 0 to 10 VDC, 2 to 10 VDC, and -10 to +10 mVDC inputs are fully scalable from a minimum of 100 counts span placed anywhere within the range of -1999 to +9999. Decimal point position is adjustable from the zero place (9999), tenths (999.9), hundredths (99.99), thousandths (9.999), or ten thousandths (.9999).

## FRONT PANEL KEY FUNCTIONS



## DIMENSIONS

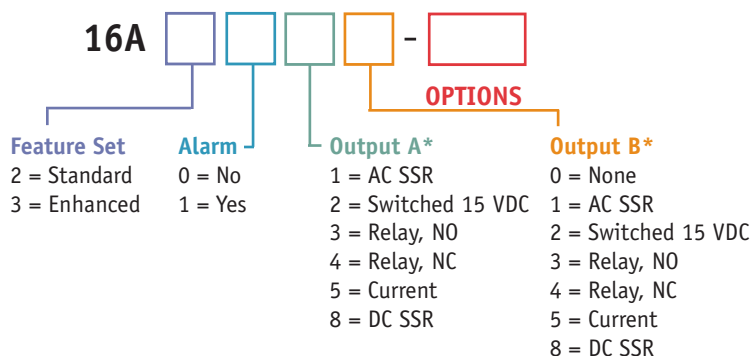
All dimensions in millimeters (inches).



All dimensions in mm (inches)  
Panel cut-out: 45 +0.6 mm (1.77 +0.02 inches) square

## MODEL IDENTIFICATION

To order, specify part number by filling the boxes with the appropriate numbers. If no options are desired, leave those boxes blank.



### Options:

- 924** Analog Remote Set Point, 0 to 10 VDC.
- 926** Analog Remote Set Point, 4 to 20 mADC.
- 928** Analog Remote Set Point, 0 to 10,000 ohms.
- 934** Analog Retransmission of Process Variable or Set Variable, 4 to 20 mADC.
- 936** Analog Retransmission of Process Variable or Set Variable, 0 to 10 VDC.
- 948** 4-Stage Set Point. One of four pre-set set point values can be implemented via contact closure.
- 992** RS-485 Serial Communications. Allows remote computer to read and write all control parameters.
- 993** RS-232 Serial Communications. Allows remote computer to read and write all control parameters.
- 9502** 12 to 24 VDC / VAC 50 to 400 Hz control operation.

\* If using a SSR output to drive a relay or other coil driven device, make sure that the coil HOLDING current is greater than 100 mA. If the RELAY output is selected to drive a contactor or other coil driven device, then also order part number 541-0014, R/C Snubber.

## SPECIFICATIONS

### Selectable Inputs:

Thermocouple, RTD, DC Voltage, or DC Current selectable.

### Input Impedance:

Thermocouple = 3 megohms minimum.

RTD current = 200  $\mu$ A.

Current = 10 ohms.

Voltage = 5000 ohms.

### Sensor Break Protection:

User determines control output to protect system after customer set time.

### Set Point Range:

Selectable (See Range Chart).

### Display:

Two 4 digit, 7 segment 7.62mm (0.3") high LEDs.

**Control Action:** Reverse (usually heating), Direct (usually cooling) selectable.

**Proportional Band:** 1 to 9999 °F, °C, or counts.

**Reset Time (Integral):** Off or 0.1 to 99.9 minutes.

**Rate Time (Derivative):** Off or 0.01 to 99.99 minutes.

**Cycle Rate:** 1 to 80 seconds.

**On - Off Differential:** Adjustable 1° F, 1° C, or 1 count to full scale in 1° F, 1° C, or 1 count steps.

**Alarm On - Off Differential:** 1° F, 1° C, or 1 count.

**Fuzzy Intensity:** 0 to 100%.

**Fuzzy Rate:** Off or 0.01 to 99.99 minutes.

**Fuzzy Band:** Off or 1 to 4000 °F, °C, or counts.

**Accuracy:**  $\pm 0.25\%$  of span,  $\pm 1$  least significant digit.

**Resolution:** 1 degree or 0.1 degree, selectable.

**Line Voltage Stability:**  $\pm 0.05\%$  over the supply voltage range.

**Temperature Stability:** 100 ppm/°C typical, 200 ppm/°C maximum.

### Isolation:

Relay and SSR outputs: 1500 VAC to all other inputs and outputs.

SP1 and SP2 Current outputs: 500 VAC to all other inputs and outputs, but not isolated from each other.

SP1 and SP2 Switched Voltage outputs: 500 VAC to all other inputs and outputs, but not isolated from each other.

Process Output (Options 934, 936): 500 VAC to all other inputs and outputs.

**Supply Voltage:** 100 to 240 VAC, nominal., +10 -15%, 50 to 400 Hz. single phase; 132 to 240 VDC, nominal., +10 -20%.

**Power Consumption:** 5 VA maximum.

**Operating Temperature:** -10 to +55 °C (+14 to 131 °F).

**Storage Temperature:** -40 to +80 °C (-40 to 176 °F).

**Humidity Conditions:** 0 to 90% up to 40 °C non-condensing; 10 to 50% at 55 °C non-condensing.

**Memory Backup:** Non-volatile memory. No batteries required.

### Control Output Ratings:

AC SSR: 2.0 A @ 240 VAC at 25 °C (77°F), zero cross-over fired. Derates to 1.0 A @ 55° C (130°F). Minimum load is 100 mA.

DC SSR: 1.75 A @ 32 VDC maximum isolated.

Relay: SPST, 3 A @ 240 VAC resistive; 1.5 A @ 240 VAC inductive; Pilot Duty Rating: 250 VA, 2 A @ 120 VAC or 1 A @ 240 VAC.

Alarm Relay: SPST, 3 A @ 240 VAC resistive; 1.5 A @ 240 VAC inductive; Pilot Duty Rating: 240 VA, 2 A @ 120 VAC or 1 A @ 240 VAC.

Current (isolated): 0 to 20 mA across 600 ohms maximum.

Switched Voltage (isolated): 15 VDC @ 20 mA.

**Panel Cutout:** 45 mm x 45 mm (1.775" x 1.775").

**Depth Behind Mounting Surface:** 115.3 mm (4.54").

**Weight:** 227 g (8 oz).

**Agency Approvals:** UL E83725, CE.

**Front Panel Rating:** Type 4X, (IP66).